

# AMD Projects

Innovate • Transform • Protect

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CDC's Advanced Molecular Detection (AMD) initiative fosters scientific innovation to transform public health and protect people from disease threats.

## AMD Projects: Transforming Public Health Practice

### Transforming surveillance and research methods in EIP through next-generation sequencing

CDC's Emerging Infections Program (EIP) will help transform public health practice by applying a range of advanced molecular detection tools and exploring how they affect surveillance and research activities across the EIP network.

For nearly 20 years, the EIP partnership between CDC, state health departments, academic institutions, local health departments, infection control practitioners, and other federal agencies has assessed how emerging infections affect public health. Through such services as FoodNet, Active Bacterial Core Surveillance (invasive bacterial diseases including pneumococcal disease), influenza hospital surveillance and vaccine evaluations, Healthcare-associated Infections-Community Interface, and TickNET, EIP also has evaluated methods to prevent and control these emerging infections.

EIPs rely heavily on culture-based methods. With AMD laboratory and bioinformatics support, the program will transform its current surveillance methodology for several infectious diseases. EIPs will validate new methods of pathogen identification and characterization for such pathogens as those that cause meningitis, pneumonia, healthcare-associated infections, and severe diarrhea. EIP projects will explore the genetic determinants of antimicrobial resistance, genetic elements associated with disease severity and vaccine failure, and best practices for modern day molecular epidemiology.

The first projects will emphasize whole genome sequencing. EIP also will begin using other AMD-related methods—such as meta-genomics, which studies genomes from a mixed community of organisms—to explore and develop their practical applications in public health. As a result, these EIP projects will guide the broader implementation of AMD in public health.



*Clostridium difficile* bacteria obtained from a stool sample culture is a hospital-associated infection for which the EIP sites do active, population-based surveillance.

